American College of Radiology ACR Appropriateness Criteria[®]

Suspected Osteomyelitis of the Foot in Patients with Diabetes Mellitus

Variant 1: Suspected osteomyelitis of the foot in patients with diabetes mellitus. Initial imaging.

	Appropriateness								F	'inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography foot	Usually appropriate	Limited	發 < 0.1 mSv		9	9	0	0	0	0	0	0	0	0	11
		References		Study	Quality										
		12 (21636263)			4										
		13 (20567730)			4										
		11 (28366223)			4										
CT foot with IV contrast	Usually not appropriate	Expert Consensus	ତ < 0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	10	0	1	0	0	0	0	0	0
CT foot without IV contrast	Usually not appropriate	Expert Consensus	發 < 0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	10	0	1	0	0	0	0	0	0
CT foot without and with IV contrast	Usually not appropriate	Expert Consensus	發 < 0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	10	0	1	0	0	0	0	0	0
MRI foot without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	0	0	1	0	0	0	0	0
MRI foot without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	0	1	1	0	0	0	0
3-phase bone scan foot	Usually not appropriate	Expert Consensus	ଷଷଷ 1-10 mSv		1	1	10	0	0	0	0	1	0	0	0

FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	ବ୍ଟବ୍ଟ 10-30 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	11	0	0	0	0	0	0	0	0
US foot	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	0	0	0	0	0	0	0
WBC scan and sulfur colloid scan foot	Usually not appropriate	Expert Consensus	ତେତେତ 10-30 mSv		1	1	10	0	0	0	0	1	0	0	0
WBC scan foot	Usually not appropriate	Expert Consensus	ବ୍ୟତ୍ୟ 10-30 mSv		1	1	10	0	0	0	0	1	0	0	0
3-phase bone scan and WBC scan and sulfur colloid scan foot	Usually not appropriate	Expert Consensus	ବ୍ରବ୍ୟତ୍ତ 10-30 mSv		1	1	9	0	0	0	1	1	0	0	0
3-phase bone scan and WBC scan foot	Usually not appropriate	Expert Consensus	ବ୍ୟତ୍ୟ 10-30 mSv		1	1	10	0	0	0	0	1	0	0	0
3-phase bone scan and WBC scan with SPECT or SPECT/CT foot	Usually not appropriate	Expert Consensus	ବ୍ୟବ୍ୟକ୍ତ 10-30 mSv	✿֎֎֎ 3- 10 mSv [ped]	1	1	10	0	0	0	0	1	0	0	0

Variant 2: Soft-tissue swelling without ulcer. Suspected osteomyelitis or early neuropathic arthropathy changes of the foot in patients with diabetes mellitus. Additional imaging following radiographs.

	Appropria	teness				D (1				I	Final	Tabu	Ilatio	ns		
Procedure	Catego		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI foot without and with IV contrast	Usuall appropri		Strong	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	0	1	1	8
			References		Study	v Quality										
			17 (24764120)			4										
			26 (23897135)			3										
			27 (21868781)			4										
			2 (28497161)			3										
			21 (16037509)			3										
			22 (19098186)			3										

							-								
		29 (15049523)			4										
		24 (18036160)			2										
		25 (10421237)			3										
		18 (15863990)			3										
		19 (18956147)			3										
		28 (8518119)			3										
		23 (17242312)			М		-								
		20 (9169715)			3	1						1			
MRI foot without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	1	0	0	1	1	1	4	3
		References		Study	Quality										
		17 (24764120)			4										
		26 (23897135)			3										
		27 (21868781)			4										
		2 (28497161)			3		-								
		21 (16037509)			3		-								
		22 (19098186)			3		-								
		29 (15049523)			4		4								
		24 (18036160)			2		-								
		25 (10421237)			3		-								
		18 (15863990)			3		-								
		19 (18956147)			3		-								
		28 (8518119)			3		-								
		23 (17242312)			М		-								
		20 (9169715)			3	1		1	1	-	1				
CT foot with IV contrast	May be appropriate	Limited	≎ <0.1 mSv	v 0.03- v 0.3 mSv [ped]	5	5	0	0	0	1	9	2	0	0	0
		References		Study	Quality										
		3 (27587513)			4										
		17 (24764120)			4										
		16 (18025514)			4										

		13 (20567730)			4										
		15 (29058098)			4										
CT foot without IV contrast	May be appropriate	Limited	❸ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	5	5	1	0	2	1	5	2	0	0	0
		References		Study	y Quality										
		3 (27587513)			4										
		17 (24764120)			4										
		16 (18025514)			4										
		13 (20567730)			4										
		15 (29058098)			4										
3-phase bone scan and WBC scan with SPECT or SPECT/CT foot	May be appropriate	Strong	ତତତତ 10-30 mSv	֎֎֎֎ 3- 10 mSv [ped]	5	5	0	1	0	0	10	1	0	0	0
		References		Study	y Quality										
		51 (20851003)			2										
		47 (17138732)			2										
		48 (14523585)			3										
		49 (17146681)			3										
		50 (27560470)			3	1									
FDG-PET/CT whole body	May be appropriate	Strong	ଡଡଡଡ 10-30 mSv	&&& 3- 10 mSv [ped]	4	4	4	1	1	3	3	0	0	0	0
		References		Study	y Quality										
		41 (23905618)			4										
		42 (22801731)			1										
		44 (12766596)			3										
		45 (14990668)			4										
		39 (17460537)			2										
		40 (15680102)			2										
		43 (15750157)			3										
		46 (21934545)			М										

WBC scan foot	May be appropria	Limited	ଡଡଡଡ 10-3 mSv	30		4	4	1	1	2	2	5	0	0	0	0
		References			Study	Quality										
		34 (16702459)				4										
		35 (3157204)				3										
3-phase bone scan and WBC scan foot	May be appropria	Limited	ତତତତ 10-3 mSv	30		4	4	1	1	0	5	5	0	0	0	0
		References			Study	Quality										
		32 (3171695)				3										
		33 (2341891)				3										
WBC scan and sulfur colloid scan foot	Usually appropria	Limited	֎֎֎֎ 10-3 mSv	30		2	2	6	2	1	1	2	0	0	0	0
		References			Study	Quality										
		37 (17127204)				4										
		36 (9476948)				3				_						
3-phase bone scan and WBC scan and sulfur colloid scan foot	Usually appropria	Limited	ତତତତ 10-3 mSv	30		2	2	4	3	0	2	2	0	1	0	0
		References			Study	Quality										
		36 (9476948)				3										
		38 (26706230)				3									-	
CT foot without and with IV contrast	Usually appropria	Limited	֎ <0.1 mS	v	≎≎ 0.03- 0.3 mSv [ped]	1	1	11	0	1	0	0	0	0	0	0
		References			Study	Quality										
		3 (27587513)				4										
		17 (24764120)				4										
		16 (18025514)				4										
		13 (20567730)				4										
		15 (29058098)				4									1	
3-phase bone scan foot	Usually 1 appropria	Limited	ତେତେ 1-10 mSv)		1	1	6	0	1	2	1	1	0	0	0

		References		Study	v Quality										
		30 (26883537)			4										
		31 (10395336)			3										
US foot	Usually appropr	 Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	1	0	2	1	0	0	0	0

Variant 3: Soft-tissue swelling with ulcer. Suspected osteomyelitis of the foot in patients with diabetes mellitus with or without neuropathic arthropathy. Additional imaging following radiographs.

Der er herre	Appropriateness	SOF			Dettern	Madian			F	inal	Tabu	latio	ns		
Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI foot without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	0	1	2	7
		References		Study	Quality										
		17 (24764120)			4										
		26 (23897135)			3										
		27 (21868781)			4										
		2 (28497161)			3										
		21 (16037509)			3										
		22 (19098186)			3										
		29 (15049523)			4										
		24 (18036160)			2										
		25 (10421237)			3										
		18 (15863990)			3										
		19 (18956147)			3										
		28 (8518119)			3										
		23 (17242312)			М										
		20 (9169715)			3										
MRI foot without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	1	0	0	1	0	2	4	3
		References		Study	Quality										

							-								
		17 (24764120)			4										
		26 (23897135)			3										
		27 (21868781)			4										
		2 (28497161)			3										
		21 (16037509)			3										
		22 (19098186)			3										
		29 (15049523)			4										
		24 (18036160)			2										
		25 (10421237)			3										
		18 (15863990)			3										
		19 (18956147)			3										
		28 (8518119)			3										
		23 (17242312)			М										
		20 (9169715)			3										
CT foot with IV contrast	May be appropriate	Limited	發 <0.1 mSv	�� 0.03- 0.3 mSv [ped]	5	5	0	0	0	2	8	1	1	0	0
		References		Study	Quality										
		3 (27587513)			4										
		17 (24764120)			4										
		16 (18025514)			4										
		13 (20567730)			4										
		15 (29058098)			4										
CT foot without IV contrast	May be appropriate	Limited	發 <0.1 mSv	≎≎ 0.03- 0.3 mSv [ped]	5	5	1	0	1	2	4	2	1	0	0
		References		Study	Quality										
		3 (27587513)			4										
		17 (24764120)			4										
		16 (18025514)			4										
		13 (20567730)			4										
		15 (29058098)			4										

3-phase bone scan foot	May be appropria (Disagreen	ate	Expert Opinion	ତେତେ 1-10 mSv)		5	5	1	0	4	1	0	1	2	3	0
			References			Study	y Quality										
			30 (26883537)				4										
			31 (10395336)				3						_				
3-phase bone scan and WBC scan foot	May be appropria	e ate	Limited	ତତତତ 10-3 mSv	30		5	5	1	1	0	4	5	1	0	0	0
			References			Study	y Quality										
			30 (26883537)				4										
			31 (10395336)				3										
3-phase bone scan and WBC scan with SPECT or SPECT/CT foot	May be appropria		Strong	ତତତତ 10-3 mSv	30	&&&& 3- 10 mSv [ped]	5	5	0	0	0	0	10	2	0	0	0
			References			Study	y Quality										
			51 (20851003)				2										
			47 (17138732)				2										
			48 (14523585)				3										
			49 (17146681)				3										
			50 (27560470)				3				-	-					
FDG-PET/CT whole body	May be appropria		Strong	ତତତତ 10-3 mSv	30	֎֎֎֎ 3- 10 mSv [ped]	4	4	3	0	2	3	4	0	0	0	0
			References			Study	y Quality										
			41 (23905618)				4										
			42 (22801731)				1										
			44 (12766596)				3										
			45 (14990668)				4										
			39 (17460537)				2										
			40 (15680102)				2										
			43 (15750157)				3										
			46 (21934545)				М										

WBC scan foot	May be appropriate	Limited	ବ୍ତବ୍ତବ୍ତ 10-30 mSv		4	4	1	1	1	3	5	0	0	0	0
		References		Study Q	Quality										
		34 (16702459)		4	Ļ										
		35 (3157204)		3	3										
WBC scan and sulfur colloid scan foot	Usually not appropriate	Limited	֎֎֎֎ 10-30 mSv		2	2	6	2	1	1	2	0	0	0	0
		References		Study Q	Quality										
		37 (17127204)		4	ŀ										
		36 (9476948)		3	3			-							
3-phase bone scan and WBC scan and sulfur colloid scan foot	Usually not appropriate	Limited	ଡଡଡଡ 10-30 mSv		2	2	6	2	0	1	2	0	1	0	0
		References		Study Q	Quality										
		36 (9476948)		3	3										
		38 (26706230)		3	3			-	-						
CT foot without and with IV contrast	Usually not appropriate	Limited	& <0.1 mSv	֎֎ 0.03- 0.3 mSv [ped]	1	1	10	0	1	0	0	0	0	0	0
		References		Study Q	Quality										
		3 (27587513)		4	Ļ										
		17 (24764120)		4	ŀ										
		16 (18025514)		4	ŀ										
		13 (20567730)		4	ļ										
		15 (29058098)		4	ļ										
US foot	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	1	2	1	0	0	0	0	0

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- Study Quality: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at www.acr.org/ac.